

INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

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COUNTRY	USSR (Moscow Oblast)	REPORT	
SUBJECT	1. Diesel Engine Electrical Repair Plant (MEMZ) in Lyublino 2. The Borets Machine Construction Plant, Moscow 3. Internal Grinding Machine Plant (ZVShS), Moscow	DATE DISTR. <i>(Description / Margrave / Security)</i> NO. PAGES <i>(Description / Margrave / Security / Training school)</i> REFERENCES	28 October 1958 2 25X1
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Four reports on industrial plants in the Moscow Oblast

[redacted] Attachment 1 is a report on the Diesel Engine Electrical Repair Plant in Lyublino and contains information on its location, primary functions, plant installations, materials used, number of workers and working conditions, plant security and fire precautions, and personnel.

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Attachment 2 is a report on the Borets Machine Construction Plant and the technical center at the plant, and includes information on the identification and layout of the plant, description of plant buildings, raw materials and

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(Note: Washington distribution indicated by "X"; Field distribution by "#".)

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semi-finished machinery used, transportation facilities, number of workers, production processes, plant security and working conditions; identification and location of the technical center, number of students, curriculum, and biographical information on the director of studies at the center.

Attachment 3 is a report on the construction and operation of the oil-well pipe wrench manufactured at the Borets Machinery Construction Plant.

Attachment 4 is a report on the Internal Grinding Machine Plant (ZVShS) in the Kirov Rayon and includes information on location, production, plant layout, raw materials, working conditions, transportation facilities, fire precautions, security measures, and administrative personnel.

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MEMZ
DIESEL ENGINE ELECTRICAL REPAIR PLANT
IN LYUHLINO

1. The Diesel Engine Electrical Repair Plant, also known as the MEMZ (Moskovskiy Energo-Mekhanicheskiy Zavod) plant was located on Depoiskaya ulitsa in the southeastern outskirts of Lyublino (N 55-40, E 37-43), eleven kilometers south of Moscow, and was subordinate to the Ministry of Transportation. This plant was initially located in Moscow, but was moved to Lyublino in 1948 when it became part of the engine shed (Parovoznoye Depo) which was charged with locomotive repairs. The Kursk railroad line was located about 100 meters northeast of the plant. A rolling stock repair shop was located four meters east of the plant and a railroad engine repair shop was located south of the plant. The railroad station was located about 100 meters west of the plant.
2. The primary functions of the MEMZ plant were the electric repair of diesel engines and the manufacture and installation of appliances (this included lavatory equipment) in military railroad cars which arrived from the Kaganovich Plant. The plant also produced transformers, electric motors, centrifugal pumps, and various measuring devices. All parts manufactured here were trade-marked "MEMZ". Finished products left by truck and rail to undetermined destinations.
3. The following is a list of the plant installations including the five one-story, red brick, fire-proof buildings with sloping sheet metal roofs and no basement. The numbers in parentheses are keyed to the legend for the sketch of the plant layout on page 8 .
 - (1) Garage. This was an old 15 x 7 x 4-meter building. It housed two three-ton and one 1.5 ton "Malotov" type trucks used for hauling various materials, and one 25 to 30 HP "Povazh" passenger car for the use of the plant executives. The vehicles were well maintained by the eight garage employees.
 - (2) Warehouse. This was a 15 x 10 x 7-meter building which had been erected in 1954. It was used for storing materials, finished products, spare parts, various types of electric motors, transformers, voltmeters, sheet iron, aluminum, brass, cast iron, magnetite, and coils of copper and tin of different sizes. The warehouse contained a well-maintained five-meter-ton capacity Soviet-make traveling crane. The warehouse was staffed by two stock clerks.
 - (3) Die-stamping and welding shops. This was an old building divided into two sections. The first section measured about 7 x 6 x 4 meters and was used for metal stamping and tube making. [REDACTED]

[REDACTED] It contained the following Soviet-make machinery: one hydraulic hammer; one hydraulic press for different kinds of dies; one electric saw; two gas-oil heaters for tempering metals; two coal heaters; one oil vat

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and another for water. Four specialized workers were employed in this shop. The welding shop occupied a 6 x 5 x 4-meter space. It contained three electric motors which supplied electricity to three welding devices

About four workers were employed here.

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(4) Manufacturing section and office building. This was a 40 x 9 x 5-meter two-story brick building, constructed in 1948. The first floor contained a manufacturing section which produced centrifugal pumps and equipped railroad cars designed for army use with mechanical and electrical appliances, lavatory equipment, etc. This shop contained the following Soviet-make machines which were in good condition: one 2 x 0.8-meter lathe, two large and one small drilling machines; one small milling machine; one planing machine and six work benches. All this machinery had been constructed in 1945. This section worked one shift and employed 50 employees. The second floor contained the following offices: plant and commercial directors; and engineering, drafting and accounting. It also contained the library and the club. Thirty administrative employees worked here.

(5) Restaurant and machine shops. This was a large two-story building. The first floor contained the following sections:

- A. Restaurant. It had an entrance which faced the outside of the plant. This had a 100-person capacity and served outsiders as well as the plant employees. The restaurant was subordinate to the Ministry of Transportation and was open 24 hours a day. Meals cost from four to five rubles each. It employed 25 to 30 workers besides the cooks and waiters.
- B. Electric motor repair shop. This contained two small Soviet-make drilling machines and two work benches for filing. This shop which worked together with the electric shop located on the second floor and dismantled electric motors for repair. This shop worked one shift and employed from 30 to 35 employees.
- C. Machine shop. This contained the following late-model, in good condition machines: one 500-millimeter lathe; five 300-millimeter lathes, four 200-millimeter lathes; one turret, one automatic, and one "Karuselniy" lathes; three large milling and three precision polishing machines; and one small and one large drilling machines. This shop produced wheels, axles, gears, bearings, valves, pistons, piston rings, nuts, screws, and centrifugal and compressed air pumps.
- D. Diesel electric repair shop. This shop contained one 5 and one 10-metric-ton capacity traveling cranes and a work bench. This shop employed 30 machinists and worked one shift only from 0800 to 1700 hours, with one hour for lunch.
- E. Motor winding shop. This shop was subordinate to the Paro-voznoye Depo. Locomotive electric motors were wound here.

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The second floor contained the following sections:

- A. Carpentry shop. This contained the following Soviet-make machines: two old drilling machines; two new electric saws; one new planer and two work benches. This shop, which employed eight workers, worked one eight-hour shift.
- B. Boiler Room. This contained one old furnace in poor condition and one modern automatic coal-fed furnace. The boiler room supplied heat to all plant shops and to the Parovoznoye Depo plants. Six workers were employed here.
- C. Electric shop. (Refer to [redacted] sketch on page 9 .) This shop was composed of four sections which worked one shift and employed about 50 employees.

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Point 1: Winding shop. This occupied a 9 x 5 x 4-meter space. Several types of electric motor coils were wound here. This shop also did switchboard wiring and contained the following Soviet-make machines: two small drills and two winding machines as well as a 1.5-metric-ton capacity traveling crane and four work benches. This shop worked on 70 to 75 electric motors per month for shipment and from 20 to 25 per month for the MEMZ plant. Some of these motors were used for railroad cars designed for army use. Five to six railroad cars per month were equipped with electrical appliances. This shop employed 17 coil winders and skilled machinists.

Point 2: Transformer shop. This occupied a 6 x 5 x 3-meter space. Transformers were constructed here. The shop contained two small drilling machines and one electric spiral-heater for transformer drying. It produced 3,000 different sized (from 50 to 1,000 amperes) transformers per month, and employed ten female workers under the direction of a shop foreman.

Point 3: Machine shop. This occupied a 5 x 5 x 4-meter space. It contained two small old lathes, two presses in good condition; one old press in a poor state of repair; cut-off machines and one tin-plate spot welding apparatus. This shop was in charge of cutting magnetic sheets for transformers, manufactured screws, and did other minor work such as roughing-out parts. This shop employed two machinists and two press operators.

Point 4: Measuring devices shop. This occupied a 6 x 5 x 3-meter space. The measuring devices were manometers, voltmeters and ammeters. This shop produced about 200 per month for shipment and the same number for the MEMZ plant. Twenty workers were employed here.

D. Machine shop. This section produced drills and worked independently from the other sections. It contained the following Soviet-make machinery: two modern 200 and 300-millimeter lathes;

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a new planing machine, an old drilling machine in good condition and one work bench. The shop worked one shift and employed ten employees.

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E. Laboratory. This occupied a 5 x 6 x 4-meter space. It contained various apparatus for analyzing materials such as iron and steel. Four chemists were employed on one eight-hour shift.

(6) Turntable. Ten tracks radiated from the turntable within two meters of the machine and electric motor repair shop, another entered the diesel repair shop and another went within one meter of Building (3) which contained the forge and welding shops. A siding connected with the adjacent marshalling yard. The turntable had a two-meter-tall tower from which an operator controlled the shifting of the cars. The turntable was operated by two electric motors on each side of this tower.

(7) Open-air dump. This occupied a 10 x 7-meter area and was used for storing iron ingots and cast iron of various sizes which were delivered to this plant by truck and rail from the Kaganovich Plant.

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(8) Fuel and paint dump. This was an underground 6 x 4 x 3-meter brick structure. It had two compartments, one used as a 30-cubic-meter-capacity oil and gas-oil dump, and the other as a 20-cubic-meter paint dump. The dump had no full-time workers; they were brought in from warehouse No. 2 when needed.

3. [redacted] the electricity supplied to the plant came from the Satursk (sic) power station. The electricity supply was adequate and there were no power failures. [redacted] a power station was located three kilometers west of the plant. An electric line [redacted] came from Moscow entered the plant. Two types of electrical current were used in the plant: 220 volts for lighting and 380 volts for machinery and motors. Water was supplied by underground pipe-lines which [redacted] originated in Moscow.

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4. The materials used in the plant were: various kinds of steel, cast iron, copper, brass, bronze, aluminum, magnetite, coal oil, cement, bakelite, mica, cardboard, and wood for crating. This plant kept no reserves on hand. The materials were brought in from various points in the USSR;

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5. The plant used different sizes of wooden crates. On the outside of the crates, the destination of the shipment and the MEM plant seal were painted. Two men supervised and inspected the crating operation; one was the warehouse chief and the other was a representative of the plant to which the merchandise was to be sent.

6. The plant was situated about 100 meters from the Moscow-Kursk railroad. On the east and west sides of the plant were an undetermined number of Soviet broad-gauge tracks, some of which were used for maneuvering the trains. One of these connected with the Kursk railroad and entered the plant on the southwest. Passenger trains from Moscow and Leningrad, drawn by "Stalin" locomotives, and freight trains loaded with coal, iron, cement, wood, cattle, and the like, traveled the nearby railroad line. [redacted] the locomotives were of recent construction and in good condition.

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7. Raw materials and finished products were shipped by rail and truck. Freight trains were unloaded immediately after arrival at the plant; otherwise the Ministry of Transportation fined the plant if the cars were not immediately unloaded. Shipments were received night and day at unspecified times; [redacted] 25X1
 [redacted] the plant received coal in three 60-metric-ton railroad cars each month. For transportation of raw material and finished products the plant used a 6-meter-wide all-season asphalt road, which led to Lyublino. [redacted] the road was in good condition. 25X1
8. The MEMZ plant employed about 300 workers. All the employees were specialized except for 20 janitors and loaders. The plant administration consisted of a chief director, a commercial director, a chief engineer, and a personnel chief. Each section employed a shop chief and two foremen. Absenteeism was strictly controlled. Each worker had a work-book in order to record absences and delays. If a worker was absent three times without justification, the shop employees held a meeting in which they decided to punish the worker with three months forced labor or in some cases they dismissed the worker; they informed the plant director of the results of their meeting. In a meeting near the end of the month, workers presented their complaints and necessities. Sometimes workers who exceeded their production quota were presented with a "Meritorious Work Diploma". 25X1
9. The work and sanitary conditions were [redacted] as follows: the plant worked a three-shift schedule from Monday through Friday and half-day on Saturday. The first shift worked eight hours, the second shift seven and a half hours and the third shift seven hours. Machinists, lathe and drilling machine operators were given 15-day vacations each year. Welders and those who worked in the forge were given three weeks per year as their work was harder. A worker who spent his vacation at a rest home paid 50 percent of the bill and the Labor Union paid the other 50 percent. The workers' salaries depended on the amount they produced. The average salaries were from 800 to 1,000. If the production quota was exceeded, a worker might earn as much as 2,000 to 2,500 rubles per month. A doctor and two nurses were in charge of an emergency infirmary. Sick workers were entitled to care at the Lyublino Hospital. 25X1
10. Plant security and fire precaution measures were described as follows: the MEMZ plant was surrounded by a 2.5 meter-high wooden fence which had a 900-meter perimeter and three entrances. The plant was not guarded from the outside. A disabled man guarded the installations. A propusk was required in order to enter the plant. This identity card bore the full name, category, and number of the worker. After the worker presented his propusk, he hung up his numbered badge on a bulletin board located near the entrance and at night took it down again as he left the plant. There were no restricted areas in the plant. The plant did not employ a group of firemen. Once in a while, an employee from Lyublino fire department would come to the plant, make an inspection and give instructions to the plant personnel on fire and security precautions. All shops were equipped with two or three hand fire-extinguishers and a water outlet was located in each installation. 25X1
11. [redacted] the names of the following plant personalities:
 Filipov (fmu)-plant director. [redacted] 25X1
 [redacted] 25X1

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Prakudin (fmu)-chief engineer. Married, about 45 years old, 1.70 meters tall, heavy build, inclined to be fat, reddish hair, blue eyes, straight nose, and light beard. Communist Party member.

Busarov (fmu)-chief engineer who replaced Prakudin in 1956. Married, about 40 years old, 1.70 meters tall, heavy build, inclined to be fat, dark hair, dark complexion, brown eyes, straight nose, and heavy beard. He was not a Communist Party member.

Listkov (fmu)-chief engineer of electrical shop. Single, 33 years old, 1.65 meters tall, physically weak looking individual, very thin, blond hair, blue eyes, straight nose, and light beard. He was not a member of the Communist Party.

Baranov (fmu)-He was in charge of the machine shop.

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Katya (fmu)-technical chief in charge of the electrical shop. Female, married to the plant engineer Pryatkov.

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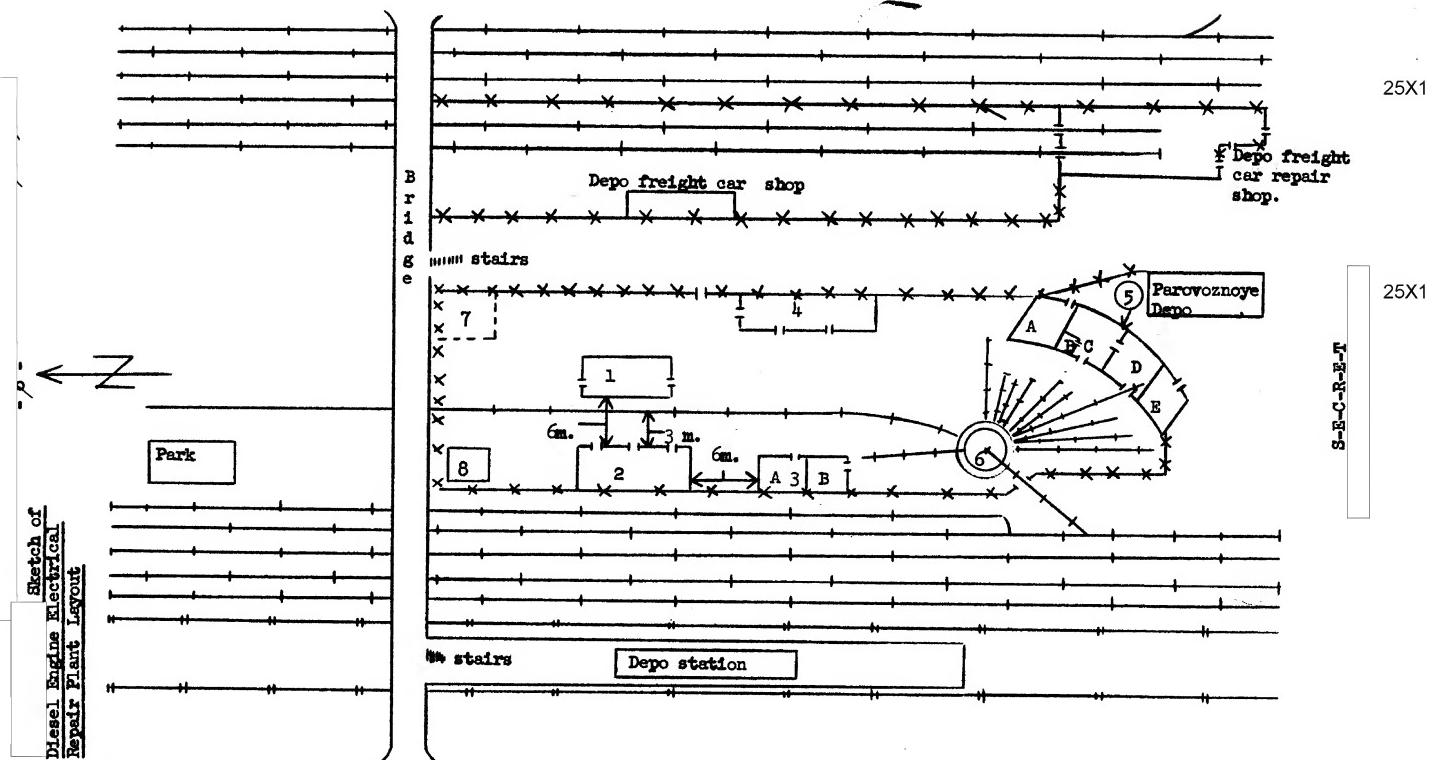
Pryatkov (fmu)-engineer.

Baravkov (fmu)-chief engineer of diesel repair section.

Chubakov (fmu)-personnel chief.

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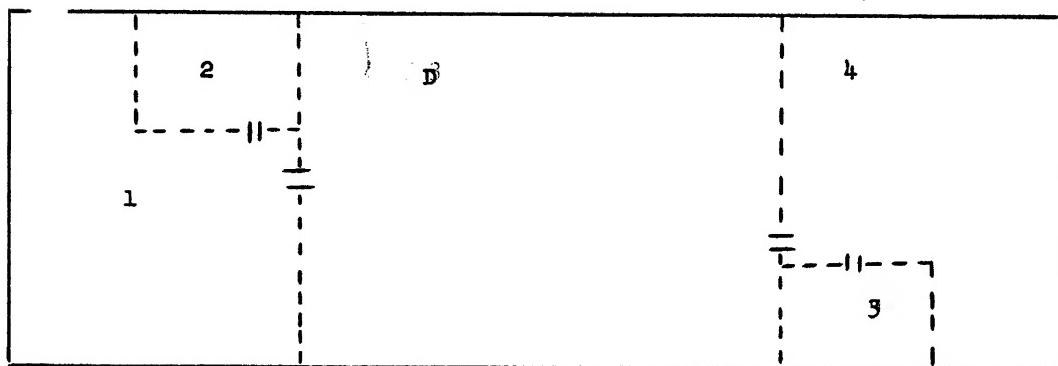


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Sketch of
Electric Shop of the Diesel Engine
Electrical Repair Plant

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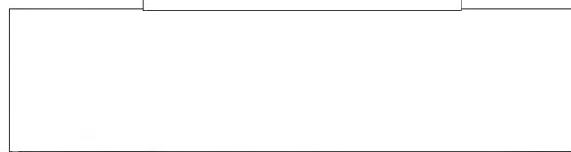
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Attachment 2

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1. THE BORETS MACHINE CONSTRUCTION PLANT IN MOSCOW

Identification and Location of Plant

1. The Borets Plant, which manufactured compressors, steam turbines, plunger pumps, petroleum extraction pumps, and other machinery for the petroleum industry, was subordinate to the Ministry of the Petroleum Industry. It was located on Skladochnaya ulitsa No. 6 (1), in the Dzerzhinskiy rayon, Moscow. (Refer to sketch A, page 10, an overlay of Moscow 12754, based on Plan of Moscow 1:20,000. Second Edition, GUGK Moscow, 1940) and sketch B, page 11, a sketch show the location of the Borets Plant.) Surrounding the plant was a three-meter-high brick wall topped with two rows of non-electrified barbed wire; the perimeter measured about 400 meters in width and 500 meters in depth. The vehicular and personnel entrance to the plant area was on Skladochnaya ulitsa through a large gate (No. 1 on sketch A, page 10). Another large gate (No. 2 on sketch A, page 10) provided entrance for the railroad siding which connected the plant with the Savelovskiy Vokzal. [] all the space in the enclosure, in fact, had been utilized so that there was not room for additional shop buildings. There were no secret structures in the plant.

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Description of Plant Buildings

2. Numbers in parentheses below refer to the numbers on sketch C, page 12, of the layout of the Borets Plant.
- (1) Main gate, the pedestrian and vehicular entrance. It was wide enough to accommodate three vehicles abreast. The pedestrian and vehicular lanes were separated by two parallel rails.
- (2) Railroad gate.
- (3) A small wooden structure, five meters wide, with a 15-meter-long facade; the facade was an integral part of the wall and was therefore of brick. The following offices were located in this structure:
- a. Office of the plant guards. []
 - b. Office of the chief of personnel. The personnel chief maintained a biographic folder on each worker and issued the propusk to employees and visitors.
 - c. First aid clinic, staffed by five doctors, each of whom had an office in the clinic. The clinic had no hospital facilities and all cases needing hospitalization were transferred by ambulance (the plant had two ambulances) to the rayon hospital.

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- (4) Model-making shop where wooden prototypes for all parts manufactured in the plant were made. The shop was replete with carpentry benches, electric saws and brushes, and all necessary carpentry tools.

(5) Foundry. The foundry furnaces operated on fuel oil and the building had a low, cone-shaped, sheet-metal smokestack which did not protrude above the roof. It was equipped with 12 to 14 overhead cranes by means of which heavy molten parts were transferred to Machine Shop No. 1 (No. 11 on sketch C, page 12) and small molten parts to Machine Shop No. 2 (No. 10 on sketch A). (The foundry and the shops or installations numbered 6, 7, 8, 11, 13, 14, 15, 17 and 18, which are described below, were all located within an old sheet-metal-roofed brick building which was situated inside the brick-walled perimeter described in paragraph 1 above. The aforementioned brick building was between 18 and 20 meters high, about 200 x 140 meters in dimension, and had large skylights in the roof.)

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- (6) Storage dump.

(7), (8), and (9): Shower rooms and offices of the section chief and foreman. These were located above the foundry.

(10) Machine Shop No. 2. Small parts (weighing less than 15 kilograms) were machined in this shop and thereafter transferred by electric conveyor to the assembly shop (No. 12 on sketch C). The shop was equipped with small-sized lathes, milling machines, and drill presses.

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- (11) Machine Shop No. 1, located next to the foundry in the structure described in (5) above. Machining of heavy parts was done in this shop which was equipped with six overhead traveling cranes and about 100 machines: various types of lathes, milling machines, and drill presses. Some of the vertical lathes were about five meters high and three meters in diameter.

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- (12) Assembly shop, dimensions 100 x 25 or 30 meters, where all the machine parts manufactured in Machine Shops 1 and 2 were fitted and assembled. This shop was a sheet-metal-roofed brick building with large skylights. It was equipped with three overhead traveling cranes by means of which the finished machinery was transferred to the testing room (No. 14) for testing, ~~whereafter~~ it was loaded on trucks or railroad cars for shipment to its final destination.

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- a compressor manufactured in the Borets Plant had been shown at an exposition in Argentina. The largest machine assembled in this shop was a 20-ton pump used in loading and unloading tankers, but the shop assembled pumps varying from one to 20 tons in weight.

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Sketch F on page 15 shows the layout of the assembly shop and the location of the machinery; [] assumed [] all of Soviet make. The assembly shop, which operated on one shift only, employed about 140 men.

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- (13) Central warehouse, where all the work tools were kept. (Located in the structure described in (5) above.)
- (14) Testing room, where steam-propelled machines were tested. This room, 20 x 20 meters in size, was adjacent to the warehouse. A railroad siding entered the testing room.
- (15) Boiler room. The boiler room, also located in the same structure as the foundry, was equipped with two coal-burning furnaces and two large boilers which supplied hot water for the plant and steam for the testing room. [] Coal was transported from the coal dump (No. 16 on sketch, page 12) to the boiler room by means of a conveyor belt. The boiler room had one "very high" (sic) brick smokestack.
- (16) Coal dump.
- (17) Tempering shop, equipped with two furnaces in which rods, valves, casings, and special screws were tempered. The shop also contained an oil cooling bath, 1 x 1 x 1.5 meters. About 15 workers were employed in this shop.
- (18) A pool, measuring 13 x 20 x 3 meters, containing water for use in event of fire.
- (19) Offices for garage personnel.
- (20) Garage. This was sheet-metal-roofed brick building, with accommodation for 15 trucks. The plant's vehicles included about 30 large trucks of three and five-ton capacity, six passenger cars, and two ambulances; more than half of the vehicles were parked in the open near the garage. The garage had a repair shop and gasoline pumps. (Fuel reserves were brought in from Moscow by tank-truck.)
- (21) Carpenter shop. This was a 10 x 15-meter brick building with a sheet-metal roof. It employed about 15 to 20 men.
- (22) Savings bank. This was a 3 x 3 meter frame building with a sheet-metal roof, located to the left of the main entrance.
- (23) Main office building. This was a turreted brick structure with offices on the ground floor as well as in the turrets (see sketches D and E, pages 13 and 14 , for floor plans of this building). This building, which was constructed during World War II, had a basement which could be adapted for use as an air raid shelter inasmuch as it had a 20-centimeter thick metal door and ventilators in the front wall.
- (24) Club and mess halls for plant employees. This building was 15 x 30 meters in dimension.

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(25) Electric shop. This was a 20 x 20 meter brick building with a sheet-metal roof and large windows. About 50 workers were employed in the shop, installing and repairing electrical equipment.

(26) Transformer station. This building was similar in structure to the electric shop. It contained four transformers, of unknown make and origin, each measuring 2 x 2 x 1.5 meters, which distributed power by means of underground cables to the different sections of the plant. The power was supplied by an unidentified plant or power station in Moscow.

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(27) Machine shop No. 3, where accessory parts were manufactured.

[redacted] the shop was not equipped with cranes and heavy parts were not manufactured.

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(28) Forge. Equipped with five steam-operated drop hammers. The heat in the oil-fed furnace could be controlled to obtain the desired temperature.

(29) Welding shop.

(30) Plumbing shop. This was located in the same building as, and adjacent to, the welding shop.

(31) Air-compressor station. The shop supplied compressed air for operating lathes, air pistols, pneumatic hammers, and other machinery.

(32) Warehouse for storing spare parts. This was a spacious building [redacted] roomy enough to accommodate two railroad cars; a railroad siding extended into the warehouse. However, since nearly every finished part produced by the plant was consigned, large stocks were not kept in the warehouse.

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(33) Garage where electric carts were kept and repaired. This garage was in the same building as the warehouse.

(34) Central supply depot. A brick building, 100 x 25 or 30 meters, which served as a supply room and sales store. All materials imported from other plants (i.e., bearings, electric motors, cartons) and workers' garments (overalls, boots and gloves) were stored in the depot; workers, moreover, could purchase with coupons a number of articles used in their work.

(35) Small building where all the sentry dogs were housed.

3. All the raw material (cast iron and other metal, bricks, coal, and fuel oil) used in the Borets Plant was transported by truck or train from within the Soviet Union [redacted] the supplies were adequate and of good quality. Since the plant was so close to Moscow the essential raw materials were not stockpiled on the premises nor were there any large reserves of gas, oil, or acids. Water

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was also supplied from Moscow. The only semi-finished machinery shipped to the plant consisted of electric motors, origin and purpose unknown;

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[redacted] the electric power supply was adequate and constant (see No. 26 in paragraph 2 above) and there was no need for increased power. The plant had no power installation for emergency purposes.

Transportation Facilities

4. The railroad facilities consisted of a Soviet broad-gauge, poorly-maintained siding which extended to the Borets Plant from the Savelovskiy Vokzal which was about 700 meters distant from the plant. There was no loading platform along the siding and, after the railroad freight cars were hauled by locomotive to the railroad entrance of the plant (No. 2 on sketch C, page 12), small locomotives conveyed them to various sections within the plant.

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[redacted] All the truck traffic was routed along Skladochnaya ulitsa. There was no water transportation.

Operational Information

5. The plant employed about 3000 workers, the majority of whom were skilled laborers;

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[redacted] Workers from all shops met at three-month intervals to discuss production methods and ways and means of improving production. The generally accepted concept was that the object of each new Five-Year Plan was to surpass the production figures in the previous Five-Year Plan, and all efforts were directed to this end. [redacted] there was never a shortage of work or raw material, and did not think production figures were falsified to cover up deficiencies. He said the plant's production kept pace with established plans. He knew nothing about future production plans or any projected changes in the plant. During his nine years employment in the Borets Plant,

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Production Process

6. The cast iron and/or other metal was unloaded at the dump (No. 6 on sketch C, page 12) located next to the foundry, wherefrom it was taken by hand cart to an elevator and thence to the foundry for smelting. In the foundry the molten iron was poured over sand molds made from the wooden prototypes produced in the model-making shop and thereafter the heavy parts were transferred to Machine Shop No. 1 and small parts to Machine Shop No. 2 for machining. From the machine shops the parts were taken to the assembly shop, where they were mounted and coupled to either electric motors or steam engines, and then transferred to either one of two testing rooms (No. 1 on sketch F, page 15 or No. 14 on sketch C, page 12); all the steam-propelled machines were tested in the latter shop. If the machines passed the tests they were transferred to the paint shop (No. 2 on sketch F, page 15) where they were all painted gray, stamped with the Borets trademark, and readied for shipment.

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7. [redacted] the following descriptions of some of the machinery produced at the Borets Plant:

- a. Each turbine was one-half meter high, one meter long, 25 centimeters wide, and weighed a quarter of a ton. They were painted gray and bore a small plate affixed with the Borets trademark.
- b. Each compressor was about three meters long, two meters high, about one and a quarter meters wide, and weighed about one and a half tons. They were also painted gray and bore the Borets Plant trademark. [redacted] the compressors were used to insufflate air into the petroleum wells, thereby forcing the petroleum to a level which facilitated extraction.
- c. The pumps for extracting petroleum were each three-quarters of a meter in height, as measured from the base, and two and a half meters long from one end of the piston to the other. The caliber of the pistons varied, some being between 20 to 30 centimeters and others between 30 to 40 centimeters. They were painted gray and bore the Borets trademark.

25X1

Plant Security

8. Watch towers were located at undetermined intervals along the top and at each corner of the brick enclosure surrounding the plant; a guard was stationed in each tower. Along the wall, at intervals of about 50 or 60 meters, a dog was leashed to a wire attached to the inner side of the wall. A rigid guard was not maintained, however, and occasionally the guards permitted workers who reported late for duty to jump over the wall. Employees were required to show a propusak on entering and leaving the plant, and visitors were issued temporary passes, valid only for the time indicated. There was no air raid defense system and the only air raid shelter was the basement in the building which housed the offices (see No (23), paragraph 2 above).

Working Conditions

9. Plant employees worked 46 hours a week on an eight-hour, three-shift schedule, except on Saturdays when they worked six hours. After one year of service workers received 12 days vacation and, after two or more years, 15 days. All workers could spend their vacations at the Plant rest home located on the outskirts of Moscow in an isolated area surrounded by pine trees. It was about five kilometers away from the highway, with only a foot path connecting it with the highway. The rest home had accommodations for about 200 workers.

Soviet Personalities

10. Sergey Semyonovich (Ivan) - Director of the Borets Plant. [redacted]

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25X1

Ryavov (fmu) - An old employee of the plant who worked in the assembly shop as an economist.

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25X1

Tyagunov (fmu) - Chief of the assembly shop.

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2. THE TECHNICAL CENTER IN THE BORETS PLANT

11. The floor space above the assembly shop (No. 12 on sketch C, page 12) had been converted into a so-called "Technical Center" with classrooms (see sketch G, page 16) where plant employees could attend special courses of instruction on petroleum specialties. The Technical Center was considered to be affiliated with the Moscow Technical Institute, which was subordinate to the Petroleum Ministry, but it was financed and administered by the Borets Plant which had a maintenance fund for this express purpose. The Ministry of Education furnished instructors for the Center and the Petroleum Ministry organized and financed study trips for the students. The Center was in charge of a director and his assistant who set up the five-year curriculum, organized study tours, and maintained order and discipline. The courses during the first three years of study, conducted by instructors from the Moscow Technical Institute, included physics, chemistry, and mathematics; during the fourth and fifth years, the studies included economics, industry and planning. Engineers from the Borets Plant taught the fourth and fifth year students. Upon successfully completing the course of study, a student was awarded a technician's degree in economics, industry or planning. Outstanding students were given a gold medal which entitled them to enroll, without previous examination, in any institute in Moscow in order to further their careers, or they could elect to work in the Borets Plant as technical experts in their respective fields. Graduates of the Technical Center who were not awarded the gold medal were transferred to other undetermined study centers.

12. Enrollment in the Technical Center was limited to 100 (20 for each year of study) and enrollees were required to pass an elementary school examination. No preference was given to ex-servicemen or politicians, and Communist Party and political affiliations played no role in the school's activities. There were no student committees and no recreation facilities at the Center. Classes began at 5:45 PM (45 minutes after completion of the day's work) and lasted until 10 PM. The students were granted 30 instead of 15 days vacation annually and were allowed to borrow books from the library located on the second floor of the building which housed the main offices of the Borets Plant (No. 23 on sketch G, page 12 ; see also sketch E, page 14). Students took their final examinations in June at the end of each academic year and those who did not pass repeated the examinations in September. Students who failed the second examination repeated the study course the following year. During the latter part of each academic year the students made study trips to nearby plants in Moscow but did not visit plants in other cities.

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13. [redacted] Soviet personality in the Technical Center [redacted]
[redacted] was the Director of Studies, Kaplan (fmu).

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(1) [redacted] **Comment:** There were several streets in Moscow with the name Skladochnaya and the numerical designation (No.6) served to identify this particular street.

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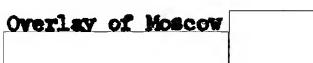
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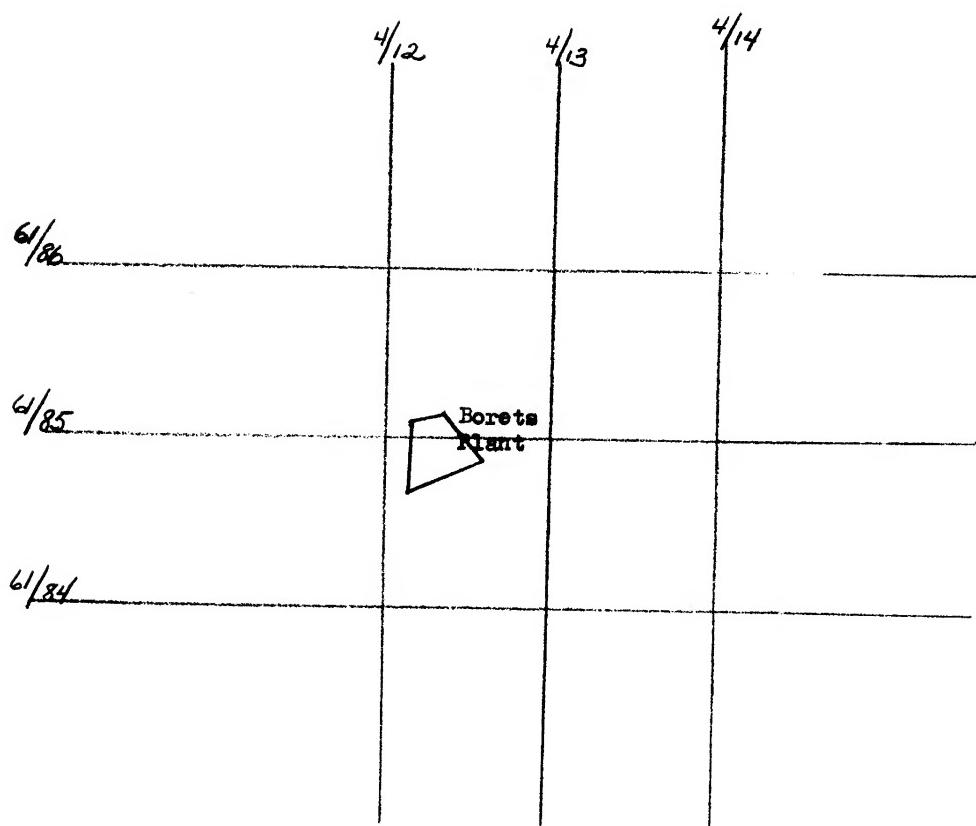
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Sketch A

Overlay of Moscow



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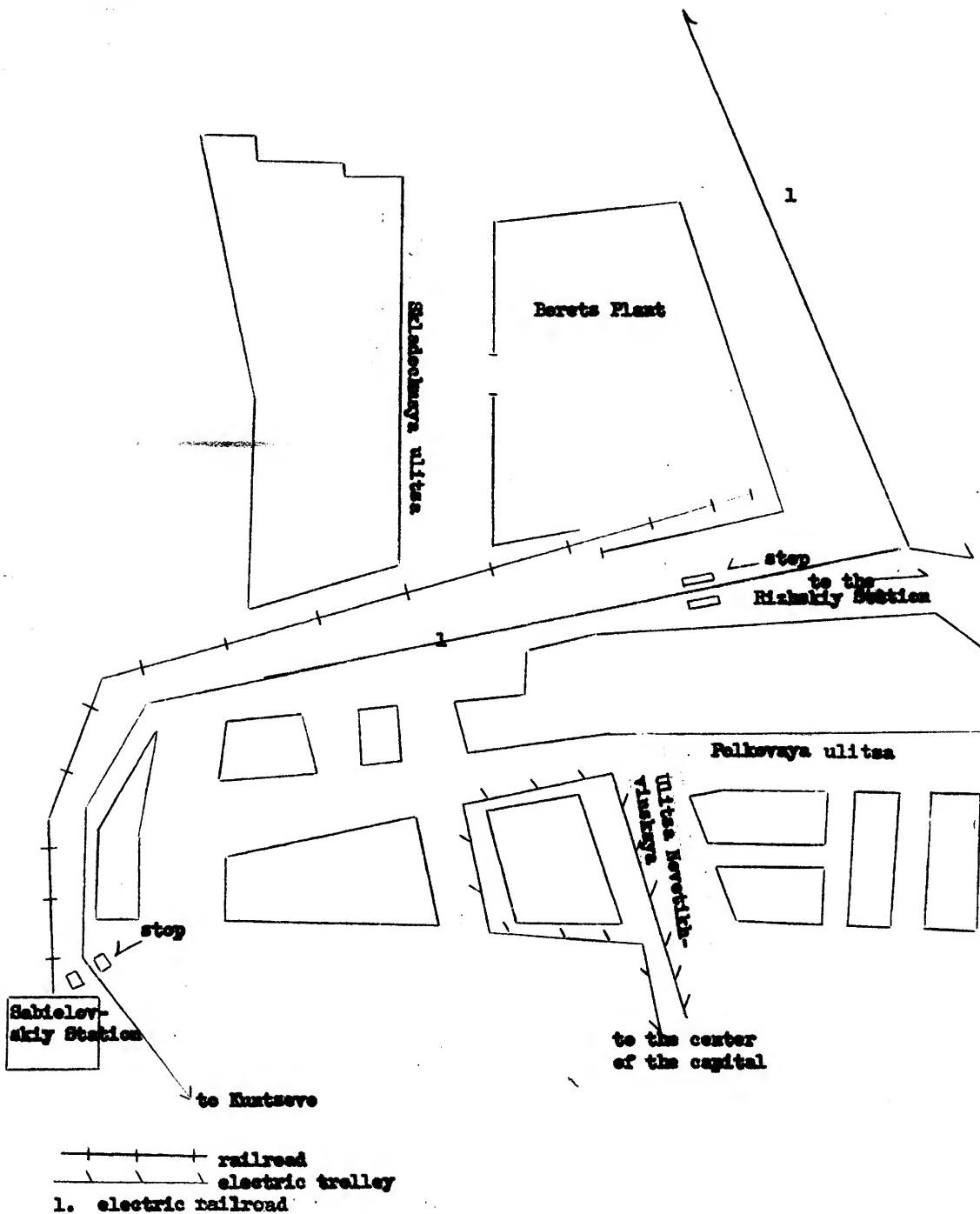
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Sketch B

Sketch Showing
Approximate Location of Berets
Plant.

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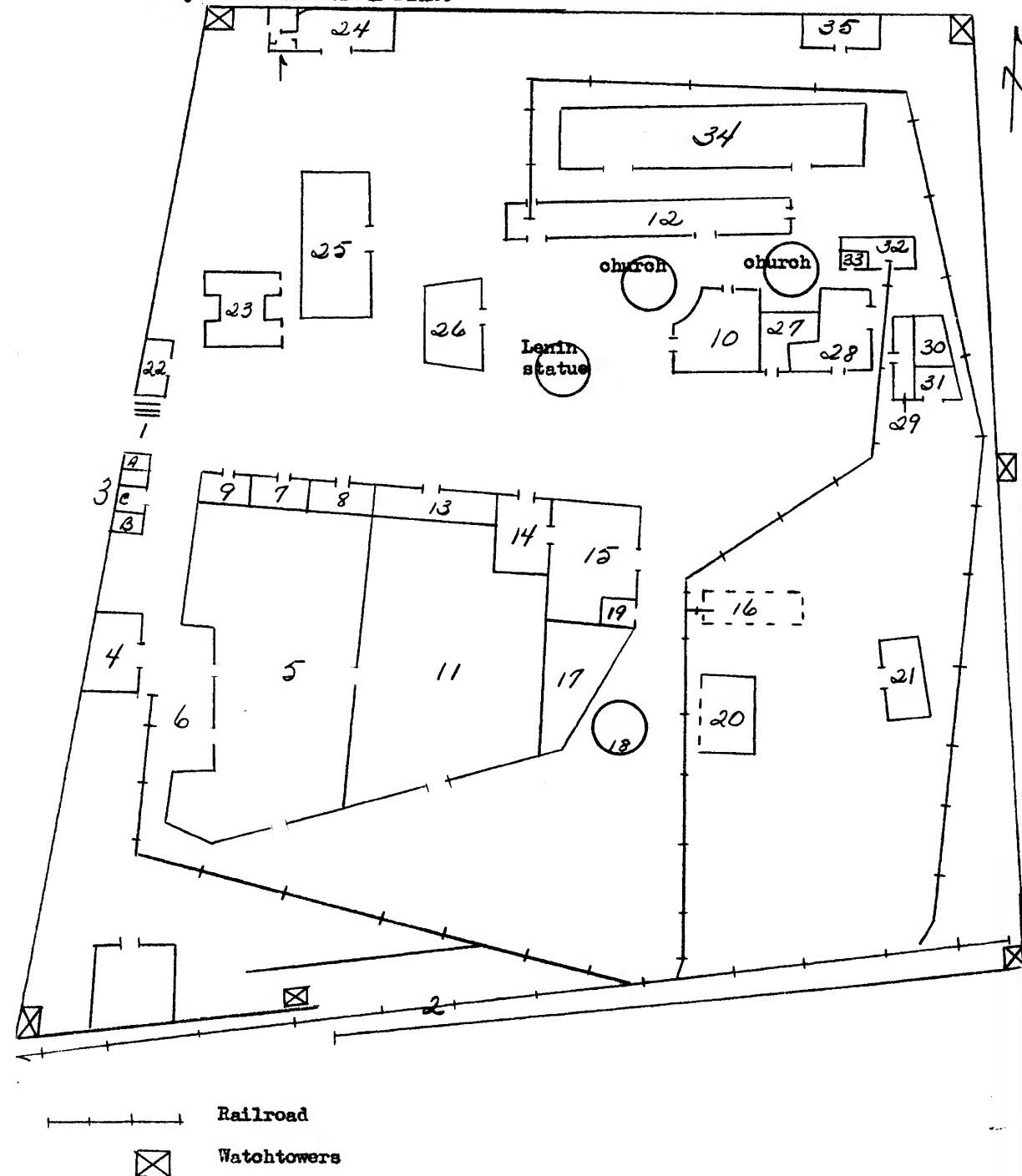
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Sketch C

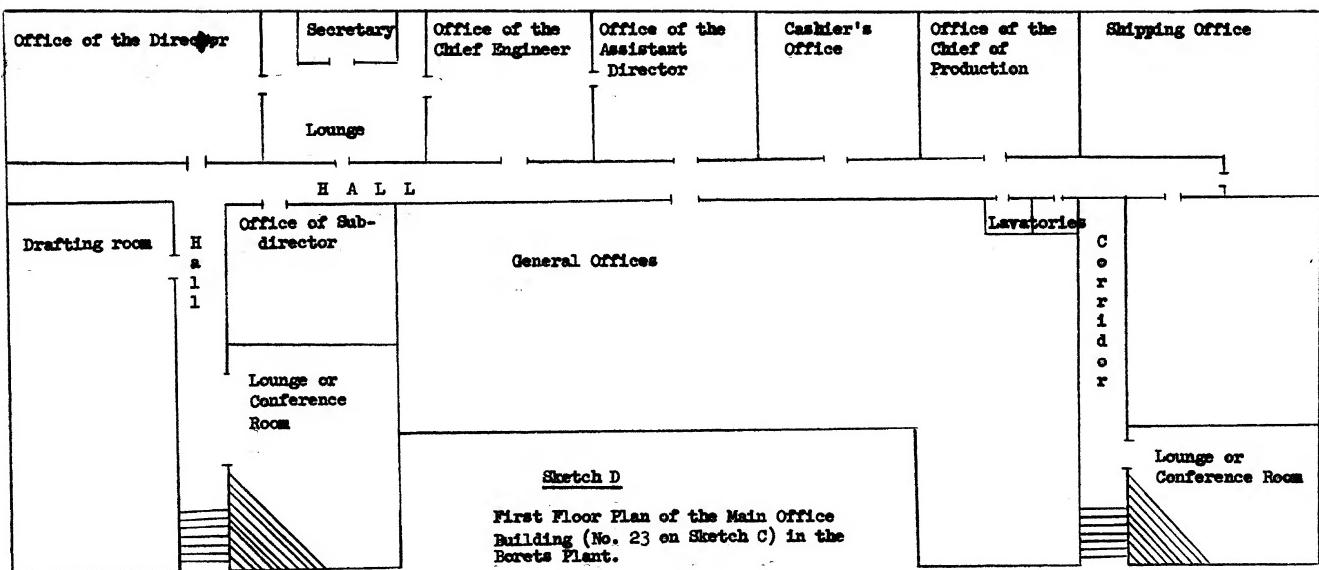
Sketch of the
Layout of the Borets Plant

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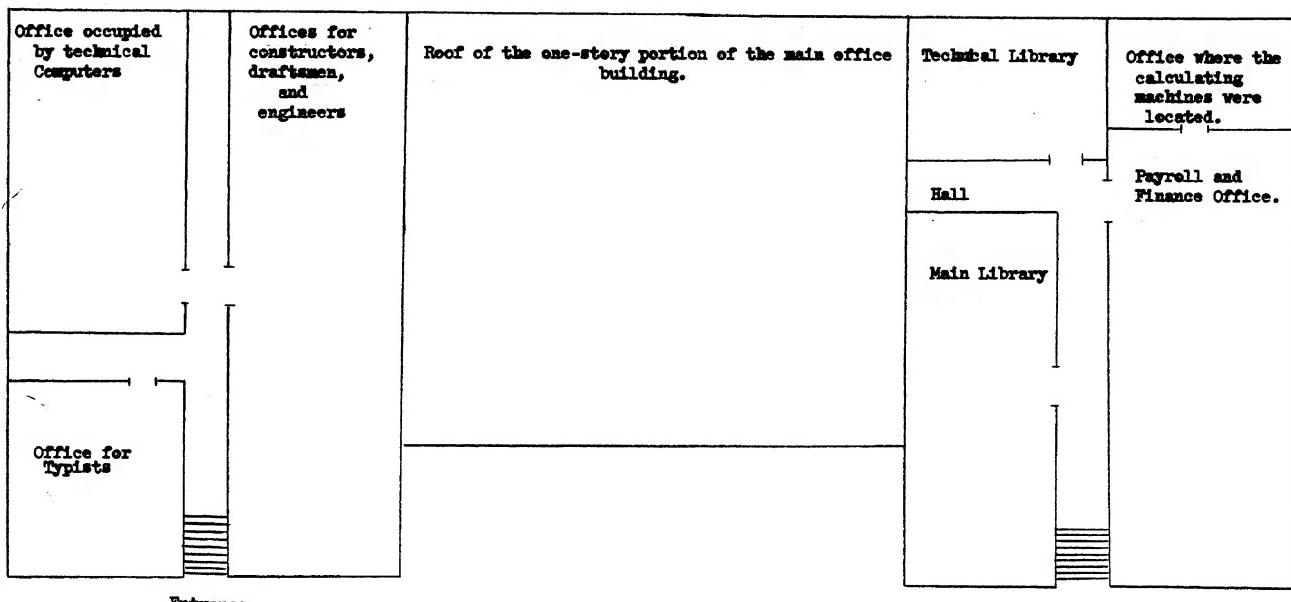
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S.E.C.R.E.T

Sketch E
Second Floor Plan of Main Office Building (No. 23 on sketch C, page 12)



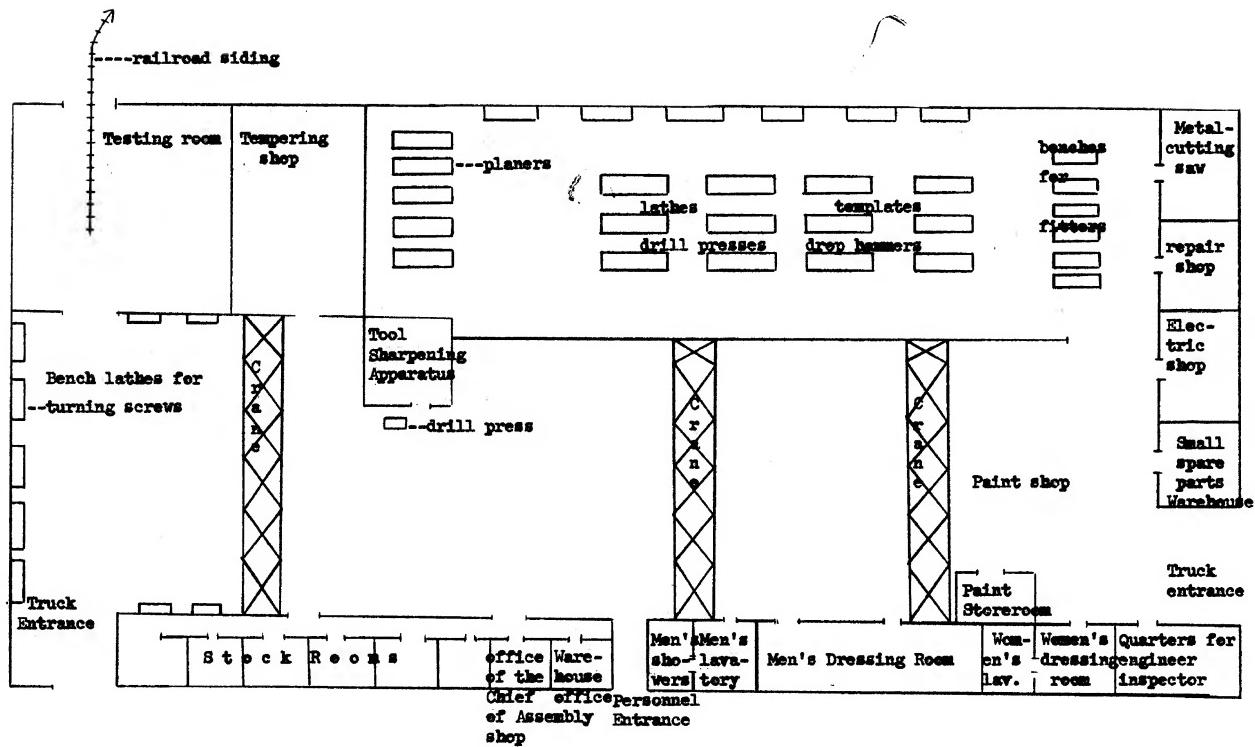
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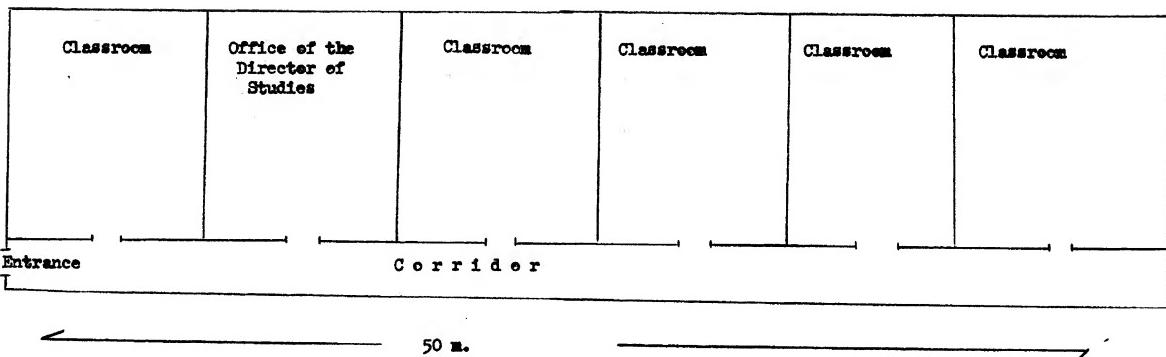
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Sketch F
Layout of the Assembly Shop in the Borets Plant



S.E.C.R.E.T

Sketch G
The Technical Center in the Boreta Plant



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25X1

OIL-WELL PIPE WRENCH

General Description

1. The Baraks (Machine Construction) Plant, located at Skladochmaya ulitsa No. 6, in the Dzerzhinsky rayon of Moscow, manufactured a wrench, allegedly a recent invention, used for coupling and uncoupling oil-well piping. This machine had two individually-operated electric motors, one in the base (15 hp) and the other in the reducer (25 hp). The machine used a three-phase 220-volt current.

25X1

Construction of Wrench

2. The following [redacted] description of the machine together with approximate dimensions. (Letters and numbers in parentheses are keyed to sketches A, B, C, and D on pages 5, 6, 7, and 8.)

25X1

25X1

- a. Base (A-1) The rectangular base, 1.60 x 1.20 x 0.25 meters, was of welded-metal construction and consisted of iron tubing, sheet-metal, and structural sections.
- b. Column This had a height of 1.60 meters, a diameter of 0.22-0.23 meters, and consisted of a solid interior core (A-2) within a steel tube (A-5). The interior core was a steel column, with maximum diameter of 160 mm. at its ends. For reason of lubrication, the middle part of the column was slightly conical, with a maximum diameter of 150 mm. and a minimum of 140 mm. The column was fitted into a sleeve (A-3) which prevented horizontal and vertical movement. The bottom of the column was screwed to a disc (A-4). The hollow outside tube (A-5) was a steel tube slightly over 160 mm. in diameter and 30-35 mm. in wall thickness. It rested and rotated on sleeve flange (A-3) which was welded to the base.
- c. Radial Arm (A-6) This moved on a horizontal plane describing a maximum arc of 70 degrees. The arm was a truncated cone-shaped steel tube 1.80 meters in length and 30-35 mm. in wall thickness, with a maximum diameter of 230 mm. and a minimum of 180 mm. The arm was welded to the upper part of the hollow column. It was reinforced with two triangular steel plates (A-7) 30-35 mm. thick, one welded on top of the tube and the other on the lower part. A quadrangular solid steel prism, (A-8) which held the axle (A-9) on which the reducer rotated, was welded on to the end of the radial arm.
- d. Coupling (A-10) This was a 450 mm. tall steel tube, with an interior diameter of 160 mm. and a wall thickness of 35 mm. For reason of lubrication, the middle part had a diameter of 175 mm.

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A bracket (A-11) was welded on the top left side of the coupling. During the operation of this machine this bracket was bolted (A-13) to another (A-12) projecting from the hollow column. Another bracket (A-14) with a rectangular cavity (A-29) was welded on the lower right side on sketch. A pin (B-5), which protruded from the lower part of the sliding device (A-30 and B-5) fitted in the cavity and moved along it. The pin was held in place from the inside by a screw and washer. This pin also prevented the sliding device from moving. The coupling rested on the sleeve flange (A-3).

- e. Sliding-Device Housing (B) This was a 1 x 0.30 x 0.30 meter "U" bar open at the top; the base was 30 mm. thick and the two lateral sides were 25 mm. thick. The end walls were 80 mm. thick. It housed the following parts: a steel axle (B-1) 90 mm. in diameter that turned on two sets of ball bearings located on the end walls; a bronze bushing with an outside thread, locked by a cotter pin midway along the axle; a cylindrical hollow sliding device (B-3) having an interior diameter same as bushing, 50 cms. long, and an exterior diameter of 18 cms. which surrounded the axle and bushing, and had a pin (B-5) on the lower part that fitted into the cavity on the bracket (A-14); a sprocket wheel (B-4) for a gearing chain, which transmitted the motor power was located on the right end of the axle.
- f. Reducer (A-15) This was made of steel and had the form of an elongated ovoid (C), and was 1.40 meters long, with a maximum width of 0.70 meters, a minimum of 0.45 meters and height of 0.25 meters. The base was 30 mm. thick, and the sides were 25 mm. It was divided in two parts. One part contained the following: a steel pinion axle (A-16) which was connected to the motor (A-17) and transmitted rotary power to a double intermediate gearwheel (A-18) with an axle that rested on two sets of ball bearings. The lower gear received the power transmitted by the steel pinion axle and the upper one transmitted the power to another gear (A-19), also with an axle that protruded 30 cms. out of the reducer, and rested on two sets of ball bearings. The portion that protruded on the outside, housed another gear (A-20). Two more gears were outside on top of the reducer (C-1), moved by (A-20), and had contact with the largest gear of the reducer (A-21), located between the two jaws (A-22 and A-23) housings. The second part of the reducer contained the two jaw housings that consisted of the following: a lower jaw housing (A-22 and D) which was joined to reducer by means of a belt. The jaw housing (D-1) was a steel disc, 60 cms. exterior diameter, 30 cms. interior diameter, 10 cms. thick, and an opening of 25 cms. It had an offset where two crescent-shaped jaws (D-2) fitted. Three shackle bolts (D-4) permitted the opening and closing of the jaws. Two steel butts (D-6) one located behind each jaw, were fitted to body and were adjusted by a wedge (D-7) that tightened with a screw; the butts served as friction clutch. Two dogs (D-8), each with an interior spring, pushed the crescent-shaped jaws to grab the tube to be coupled or uncoupled. Another spring in the shape of a horseshoe, (D-9) set in the pivots of the arms (D-3), opened the jaws and kept them opened while the machine was not operating. The upper jaw housing and jaws (A-23) was identical to the lower jaw housing except that this rotated because it was connected by a belt (A-25) to the jaw gear which was located between both jaw housings. The part of the belt that fitted into the jaw housing was square-shaped, and cylindrical in shape on the part

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25X1

that fitted into the jaw gear; the bolt was held in place by a screw. The jaw had on its lower part, four nibs (A-26) each having an inner spring, which rested lightly on top of the jaw gear (A-21). This gear was made of steel and had the same shape and dimensions as the jaw housing. The jaw gear was locked to the lower jaw housing by a ridge-and-channel (A-27 and A-28). Rotary power was transmitted by two gears (C-1), to the jaw gear fixed to the upper jaw housing. In each crescent-shaped jaw was a pair of teeth (D-5).

Operation

3. Motor (B-6) moved the chain (B-7) that in turn moved the gearwheel (B-4), transmitting the power to the axle (B-1). This axle was joined to the bushing (B-2) with an outside thread and rotated inside the sliding device (B-3). Thus, the sliding device moved horizontally from right to left of sketch B. The coupling transformed the lateral movement into a radial movement and made it possible for the arm to move to and from the tubes. Motor (A-17) moved the jaws. Jaws (A-22) grasped the female end of the pipe section already installed, holding it so that the rotating upper jaws would screw on the additional section. [redacted] this machine had to be bolted to a concrete or steel platform. In addition, this machine required a machine to hold the tubes, and a crane to feed the tubes to the wrench.

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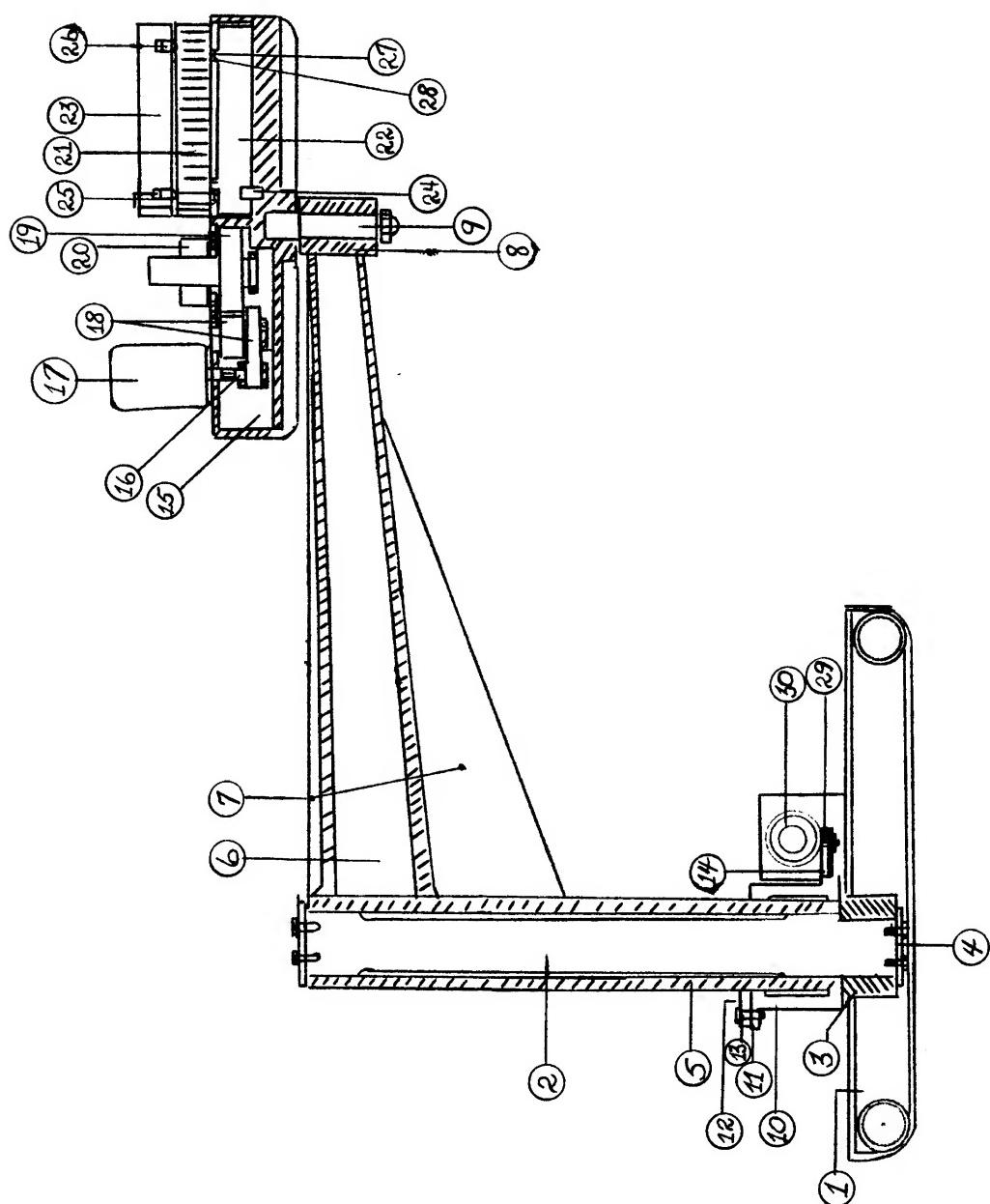
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Sketch of
Oil-Well Pipe Wrench

25X1

Sketch A



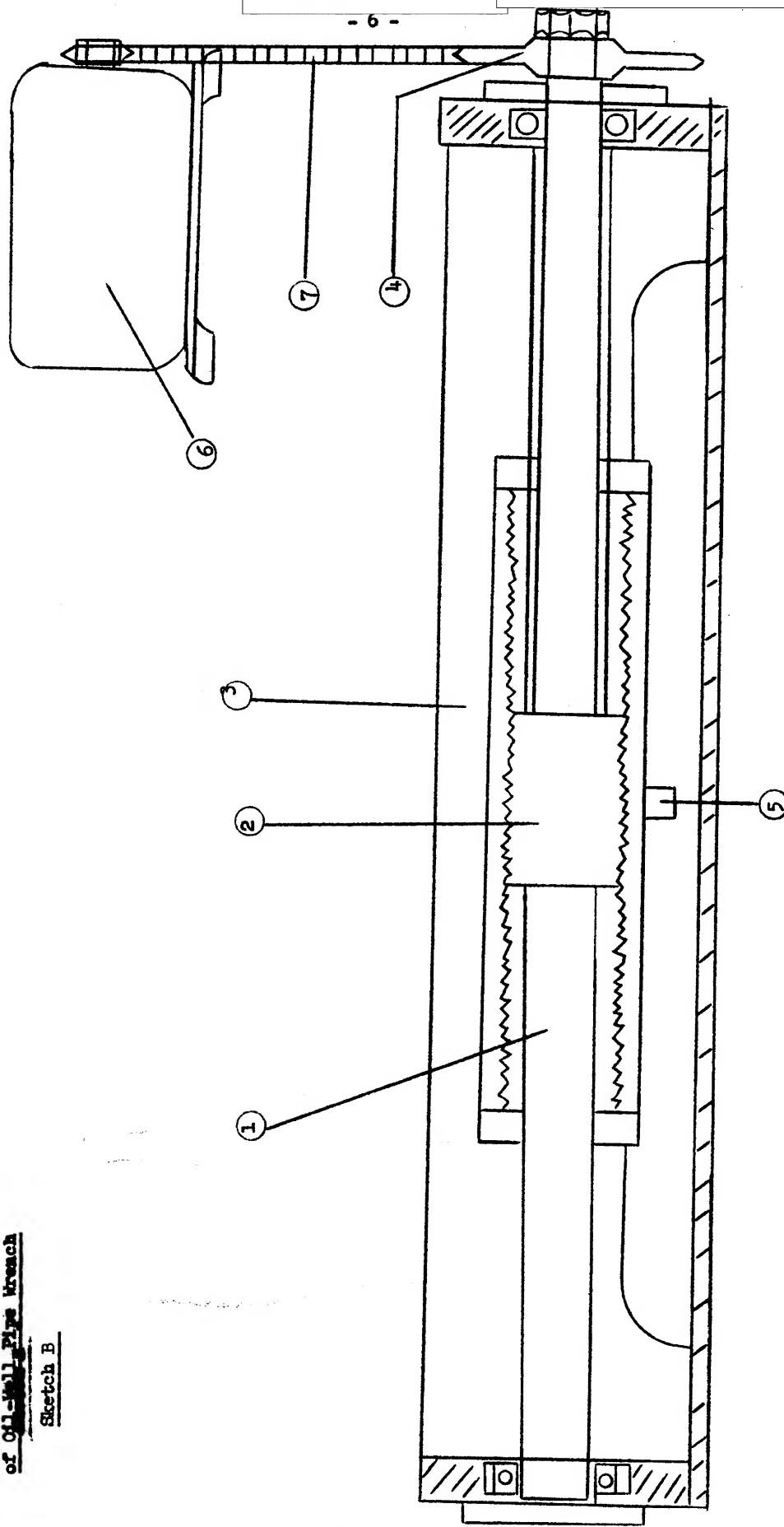
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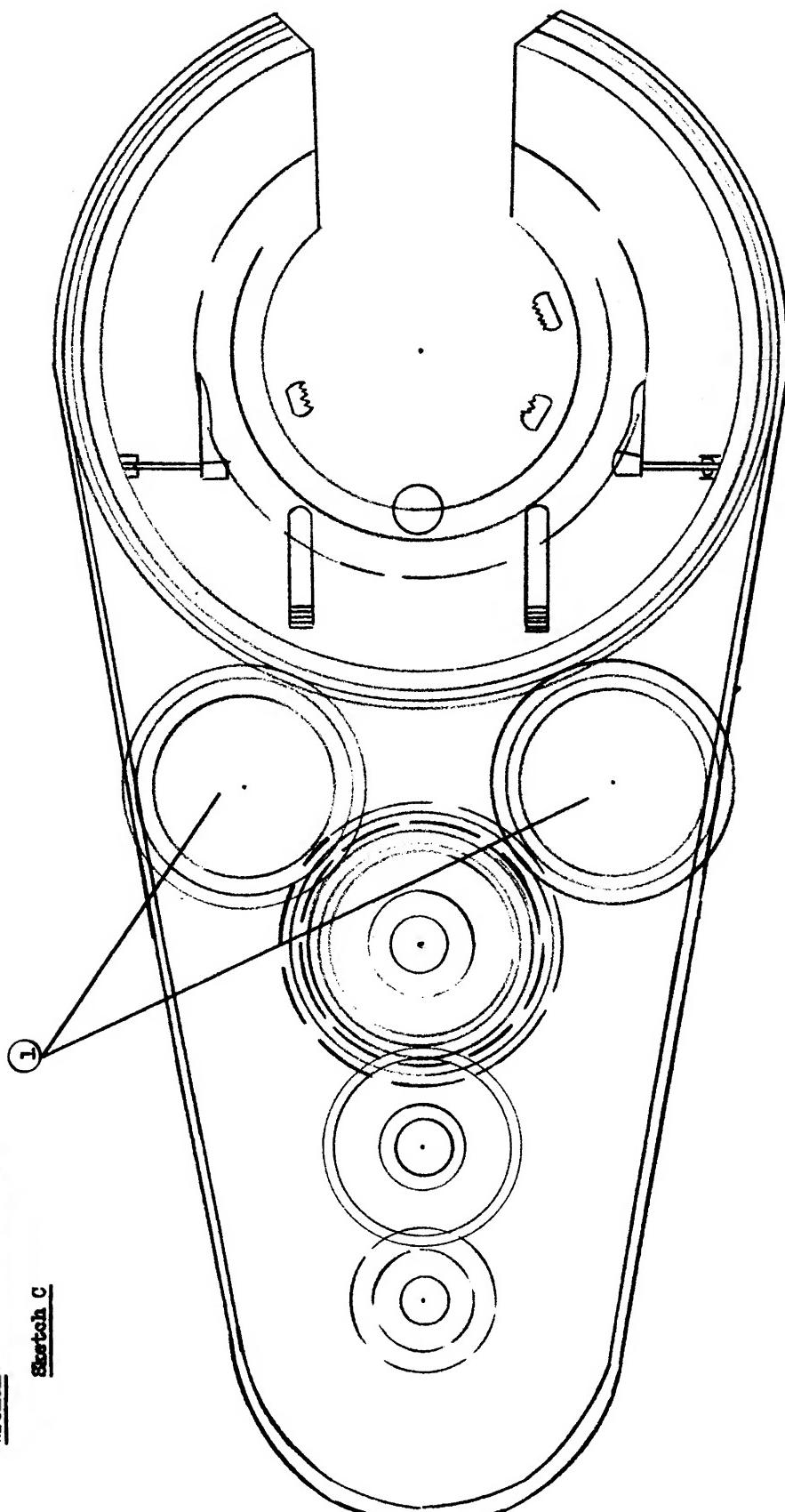
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Sketch of
Holding-Device Housing
of Oil-Hall Pipe Wrench
Sketch B

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Sketch C

S-E-C-R-E-T

25X1

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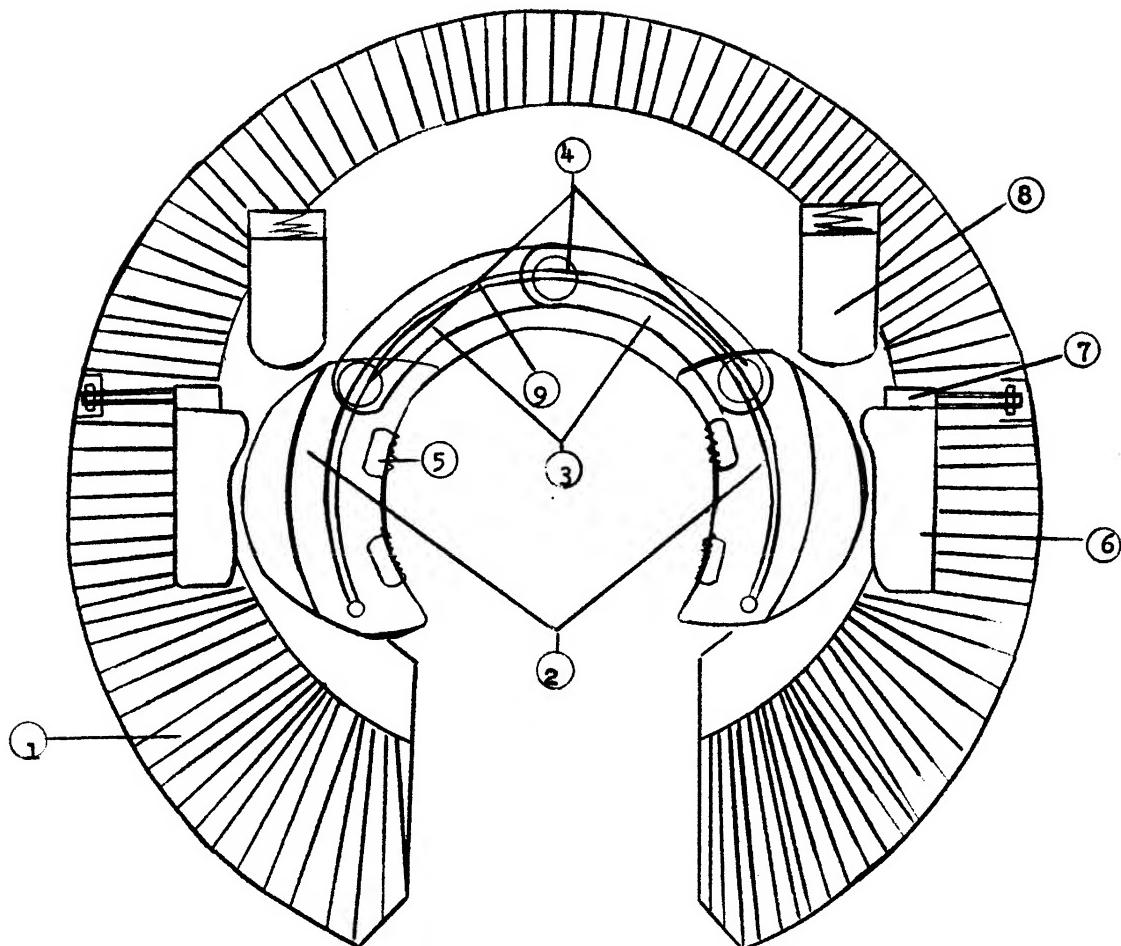
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Sketch of
Jaws Housing of Oil-Well
Pipe Wrench

25X1

Sketch D



S-E-C-R-E-T

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Attachment 7

S-E-C-R-E-T

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ZVShS INTERNAL TRUING MACHINE PLANT

Grinding

1. The Internal Truing Machine plant with the trademark ZVShS (Zavod Vnutro-Shlifovalnykh Stankov) was an old plant located in the Kirovskiy rayon of Moscow on Paveletskaya Naberezhnaya ulitsa. (For exact location of plant, see overlay of Plan g. Moskvy 12763, 1st Edition, 3-54, Scale 1:35,000 on page 8). The name of the plant is misleading as the plant primarily manufactured lathes and kitchen equipment since 1944. Internal truing machines were still produced, but very infrequently; sometimes six or eight months would go by without one being produced. The plant was subordinate to the Ministry of Machine and Instruments Building. The plant employed 1500 workers most of whom were specialists.
2. The plant produced about 30 per month of the following types of lathes, as well as spoons and other kitchen utensils:
- Lathes with a five or six-meter bedframe.
 - Lathes with a two and a half to three-meter bedframe; this was the type most frequently produced.
 - Special lathes with more automatic parts were produced about once a month; these were generally used in the manufacture of bearings.
3. As this plant was quite old, the buildings were reconstructed or remodeled as they became outmoded. [] in 1956, the management was planning to demolish buildings numbered below as (26), (29), (30), and (33). Most of the plant's fireproof structures were made of brick, with sheet metal roofs. Numbers in parentheses below refer to Sketch No. 1 on page 9 of the plant layout:
- (1) Truck entrance.
 - (2) Employees entrance. Two guards controlled this entrance.
 - (3) Entrance security officers.
 - (4) Administration building. This was a three-story building. []

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[] The following legends refer to sketches No. 4 and No. 5 on pages 12 and 13 .

First floor (Sketch No. 4)

25X1

Point one: Entrance.
 Point two: Hall
 Point three: Main offices.
 Point four: Personnel chief
 Point five: Lavatories
 Point six: Safe
 Point seven: Cashier's office.
 Point eight: Payroll and accounting section.
 Point nine: Labor union chief's office.
 Point ten: Waiting room.
 Point eleven: Hallway.

S-E-C-R-E-T

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S-E-C-R-E-T

-3-

25X1

Second floor: (Sketch No. 5)

Point one:	Stairway.
Point two:	Hall.
Point three:	Hall.
Point four:	Engineers and technicians
Point five:	Directos.
Point six:	Director's offices.
Point seven:	Deputy director:
Point eight:	Visitor's waiting room.
Point nine:	Library.

- (5) Garden.
- (6) Garage. This was located in a 20 x 15-meter structure with a ten or twelve vehicle capacity. A small repair shop was located in the garage; major repair jobs were attended to outside the plant.
- (7) Laboratory. This was a 25 x 10-meter structure. The laboratory was in charge of quality control of raw materials and the finished machinery. The plant club was located on the second floor of this building.
- (8) This building was still under construction. It was a 70 x 60-meter structure. Although the machinery was not yet installed, many unopened crates were standing nearby.
- (9) Die-stamping shop. This was located in a 30 x 20-meter structure. This shop manufactured parts such as safety guards for the lathes, washers, and other parts. This shop also manufactured knives, forks, spoons, ladles, and other die-stamped articles.
- (10) Garden.
- (11) Warehouse. This was a 35 x 20-meter building where small parts made in the foundry were stored.
- (12) Transformer station. Electricity was sent through an unknown number of transformers and distributed to the various sections. Entrance to this installation was prohibited.
- (13) Infirmary.
- (14) Living quarters: Two or three unidentified families lived here.
- (15) Bachelors' quarters.
- (16) Driveway which separated buildings (1) through (14) from the rest of the plant.
- (17) Railroad entrance.
- (18) Gasoline tank. Plant vehicles were fueled here.
- (19) Assembly Shop No. 3. This was a two-year old 15 x 10-meter structure. This shop handled the excess work load from Assembly shops No. 4 and No. 5. The small parts were assembled here and sent on to Shops No. 4 and No. 5 where the assembly process was completed.

S-E-C-R-E-T

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25X1

- (20) Foundry. This was a 60 x 25-meter structure. This building contained one outmoded, coal-fired furnace. Plans existed to replace this installation.
- (21) Furnace. This was located in the above-mentioned foundry.
- (22) Foundry office.
- (23) Open iron and scrap-iron dump.
- (24) Library. This was one of the two plant libraries. The dining room was located on the second floor of this building.
- (25) Carpentry shop. This was located in the same building as the library (No. 24).
- (26) Tempering shop. The machine parts were tempered in oil which was delivered to the shop in oil tank trucks.
- (27) Unused security posts.
- (28) Large entrance hall to tempering shop.
- (29) Large entrance hall to tempering shop.
- (30) Machine repair shop. Small machinery was repaired here. The large machinery was repaired on the spot where it was installed.
- (31) Watch dogs. These were attached by chains to a ring on a wire; this permitted the dogs to patrol 50 or 60 meters of the zone marked with this number on the sketch.
- (32) Electricians' shop. This shop was in charge of repairing the plant's electrical equipment.
- (33) Semi-automatic lathe-turning shop. This shop contained semi-automatic machinery which manufactured the screws to be used in the lathes. The shop which constructed the casting molds was located on the second floor of this building.
- (34) Open air dump.
- (35) The essential lathe parts were manufactured in the large, medium, and small parts shops which are discussed below. These shops used old, but in good condition, standard machinery such as lathes, milling machines, timing machines and drills. Fifty-five or sixty per cent was of Krasnyy Proletarii make; in addition these shops contained a Cincinnati milling machine, a Cincinnati truing machine, a Swiss truing machine, and other German V.D.F. (not further identified) machines. Standard "widia" and other special ceramic cutting tools were not used very often as they were not adaptable for this machinery and often flew out. They were not resistant to flying casting bubbles and had to have special handles. The mangle could be welded; however, this did not work too well because if the tool broke the mangle had to be dismounted and fitted to a new cutting tool. Tolerance in these shops varied according to the size of parts.

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S-E-C-R-E-T

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The following is the legend for sketch No. 2 of the large parts shop on page 10 :

- Point 1: Standard lathes.
- Point 2: Drills.
- Point 3: Vertical lathes.
- Point 4: "Large lathe."
- Point 5: Planes.
- Point 6: Standard mandrels.
- Point 7: "Large" mandrels.
- Point 8: Milling machine.
- Point 9: Truing machine.
- Point 10: Tracing machine.
- Point 11: "Giant" mandrel.
- Point 12: "Standard" milling machine.
- Point 13: "Large" milling machine.
- Point 14: Control of manufactured parts.
- Point 15: Precision metal puncher.
- Point 16: Lavatories and cloakroom.

- (36) The legend for sketch No. 3 of the machine shop for medium size parts on page 11 is as follows:

- Point 1: Lathes
- Point 2: Milling machines.
- Point 3: Buffing machines.
- Point 4: Truing machines.
- Point 5: Drill.
- Point 6: Truing machine.
- Point 7: Tool supply room.
- Point 8: Plans and special devices office.
- Point 9: Manufacturing control.
- Point 10: Lavatories and cloakroom.
- Point 11: Door which led to Shop No. 1 for large parts.
- Point 12: Door to assembly shop.
- Point 13: Door to outside.
- Point 14: A one-ton crane.
- Point 15: A half-ton crane

Machine shop No. 2, which produced small lathe parts, was located on the second floor.

- (37) This was assembly shop No. 5 where about 30 machines were assembled each month.
- (38) Security office. A group of 10 or 15 old or physically incapacitated men and women were in charge of guarding the plant entrances.
- (39) Heating installation. Two heating installations were located in the plant. One had a short brick smokestack and served the library and other buildings nearby. The other was located near assembly shop No. 4.
- (40) Smokestack.
- (41) Assembly shop No. 4. This shop served as an auxiliary to assembly shop No. 5.
- (42) Storage warehouse for large parts.
- (43) Garden.

S-E-C-R-E-T

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-6-

25X1

4. Raw materials used in the plant were iron and coal; smaller quantities of fuel oil were also used. [redacted] 25X1
 [redacted] some days no railroad cars arrived at the plant. Only enough materials for immediate use were kept on hand. 25X1
5. The plant worked inefficiently as the layout was not orderly and the shops were not arranged so the work could be moved easily from one shop to another. The plant was old and dirty and the working procedures were old-fashioned. The foundry, for example, used coal instead of fuel oil which was cheaper and more available. The annealing furnace worked inefficiently. Until 1954 the power supply was very irregular; particularly in winter, work was stopped because of a lack of electric power. Some of these problems had been remedied but the plant still used more current than was supplied to it and fuses were blown. Work had to then be stopped for a half-hour or an hour.
6. Constant efforts were made to increase production, but this led to deterioration in the quality of goods produced. A worker was never allowed to produce less than the rate he had once attained. Methods of increasing production consisted of replacing antiquated machinery and training workers to do a better job.
7. Transportation was chiefly by truck; trains were used if the load was heavy and the distance great. The truck freight was loaded at Assembly shops No. 4 and No. 5. The railroad freight was hauled by truck or hand car to the railroad siding. The machines were loaded from both sides of the siding. Cranes were used for loading and unloading heavy freight. The Soviet standard-gauge railroad siding was connected to the Moscow line which led to the Paveletskiy station. The shipment schedule depended upon how much merchandise had been ordered. The vehicle traffic used the asphalt Paveletskaya ulitsa that ran along the bank of the Moskva river. At the plant entrance it was wide enough only for two vehicles. It was always trafficable but did not have much traffic. Only vehicles going to the nearby bakery and this plant used it.
8. As the regular Moscow fire department could be called upon in case of fire, only three or four workers (eight in the larger shops) were assigned to fire squads. In case of fire, these fire fighters were to blow the siren, use the hand fire extinguishers, and shovel sand on the fire.
9. Working conditions were [redacted] as follows: workers were divided between two shifts in the eight-hour work day, six days a week. The first shift was from 0730 to 1610 with forty minutes for lunch; the second shift was from 1610 to 2430 with twenty minutes for dinner. Personnel worked only six hours on Saturdays. Workers were granted 15-day vacations which could be spent in rest homes if the worker received permission from the Labor Union. The plant did not own its own rest home. 25X1
10. Security measures at the plant were rather lax. The plant was not guarded from the outside. The entrance propusks were not difficult to obtain. A worker who forgot his propusk only had to put his hand in his pocket and keep on walking past the guard. Workers who arrived late scaled the wall or slipped in the street-side windows. [redacted] 25X1
 [redacted] Visitors were stopped at the entrance and the guard called the person they were going to visit. The visitor was issued a propusk for the necessary period of time. However, if time ran out, no extension or explanation was demanded. [redacted] 25X1
 leaflets on precautions and instructions in case of atomic attack were distributed among the workers. [redacted]

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25X1

11. Plant administrative personnel was organized as follows:

Director.
Deputy-director.
Engineers.
Chief of plans.
Construction chief.
Technicians.
Party chief.
Labor union chief.

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25X1

12. [redacted] following plant personalities:

Yakovlev, plant director.

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25X1

Chebotarev, chief of shop No. 1.

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Lyzkin, Manager of shop No. 1.

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Zalygin, foreman of shop No. 1.

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Vadeev, labor union chief.

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Bartanyan, Party chief.

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S-E-C-R-E-T

25X1

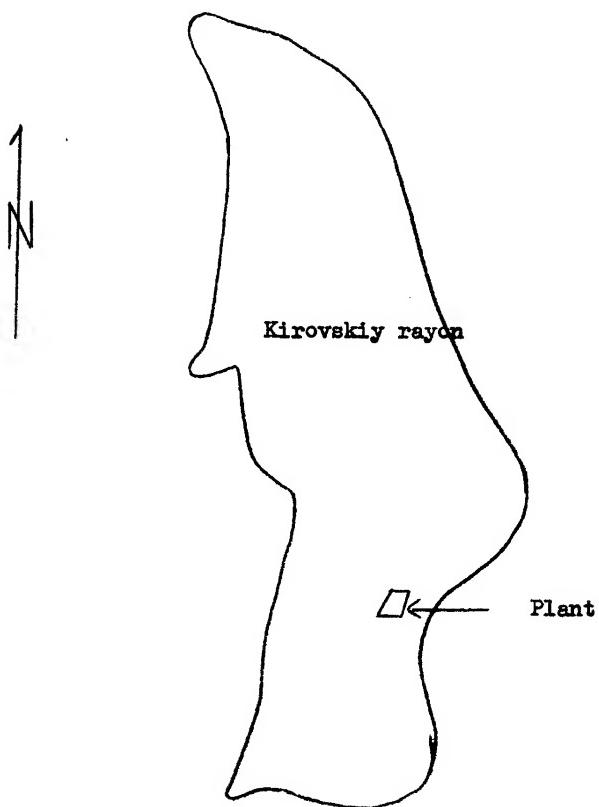
~~S-E-C-R-E-T~~

25X1

Overlay of Map of Moscow Showing Position of Internal
Truing Machine Plant.

[Redacted] Scale 1:35,000

25X1



~~S-E-C-R-E-T~~

25X1

15

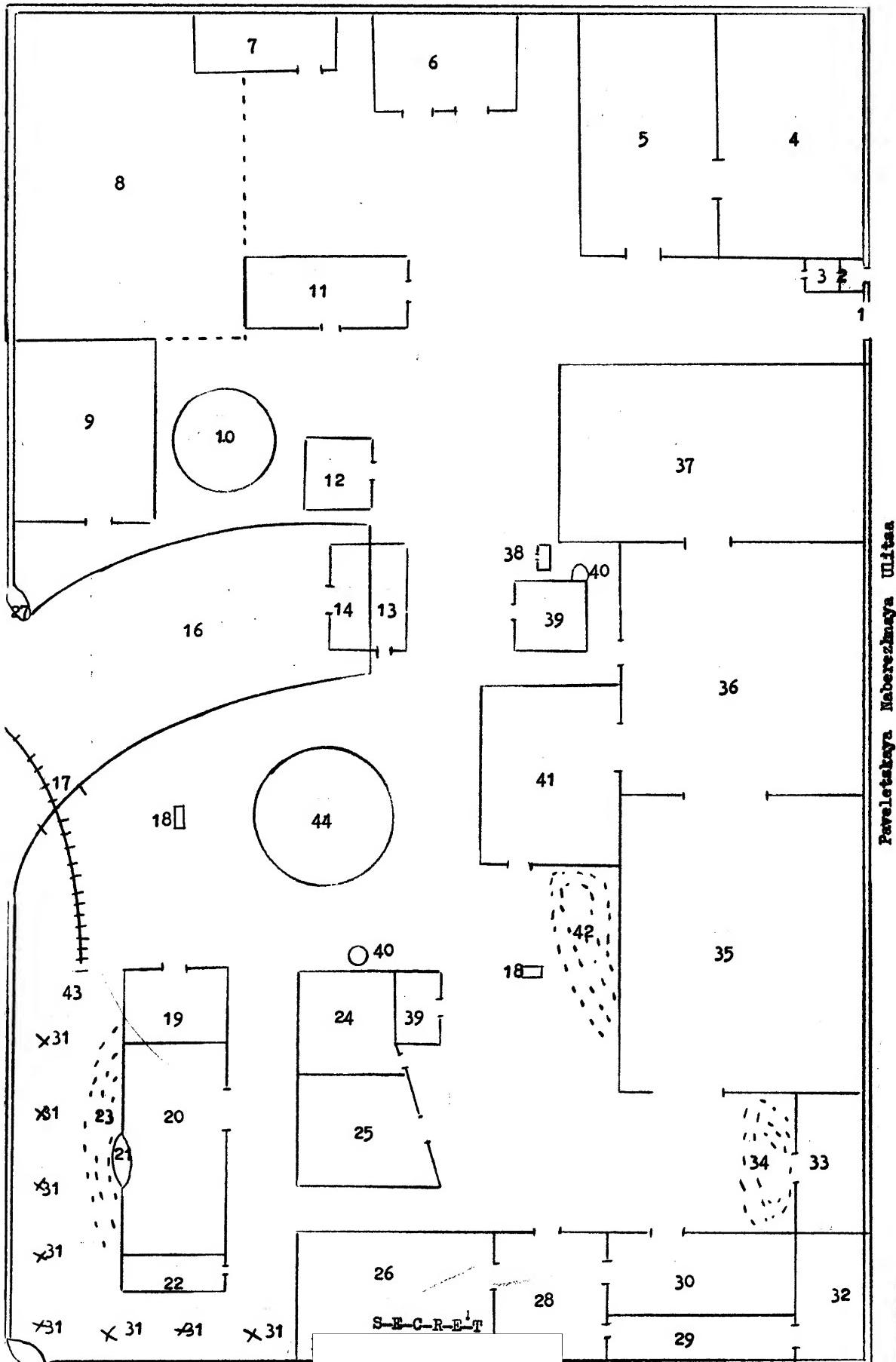
S-E-C-R-E-T

25X1

Sketch No. 1

-9-

General Layout of ZVShS Internal Truing Machine Plant in Moscow



Prestige factors in the choice of travel destinations 317

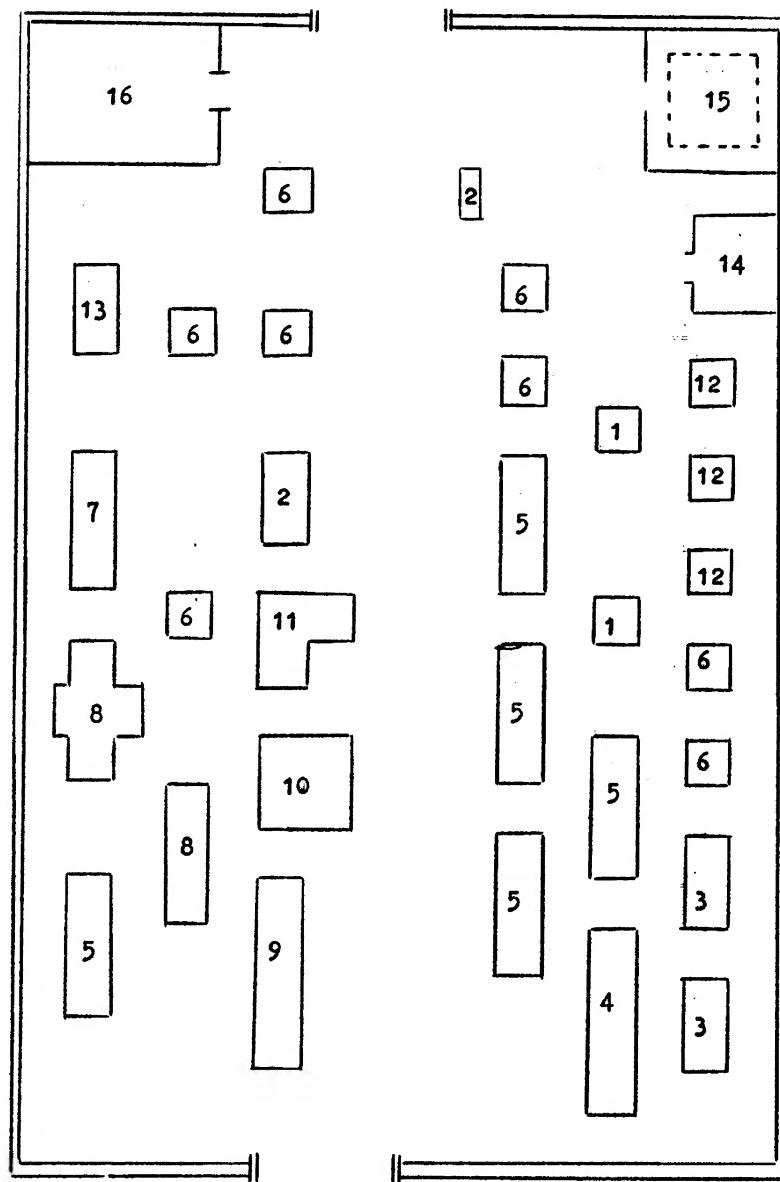
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ZVShS Internal Truing Machine Plant

Shop No. 1 for Large Parts

Sketch No. 2



S-E-C-R-E-T

25X1

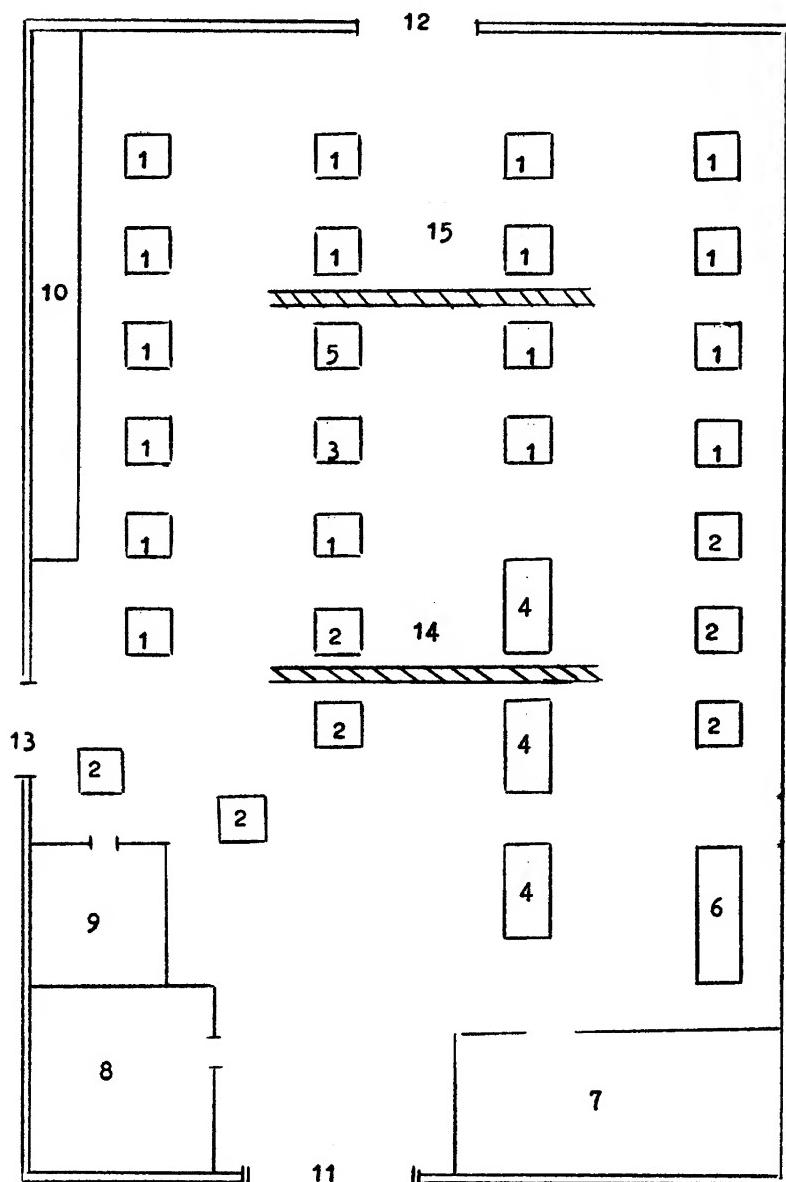
S-E-C-R-E-T

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ZUShS Internal Truing Machine Plant

Shop No. 1 for Medium Sized Parts

Sketch No. 3



S-E-C-R-E-T

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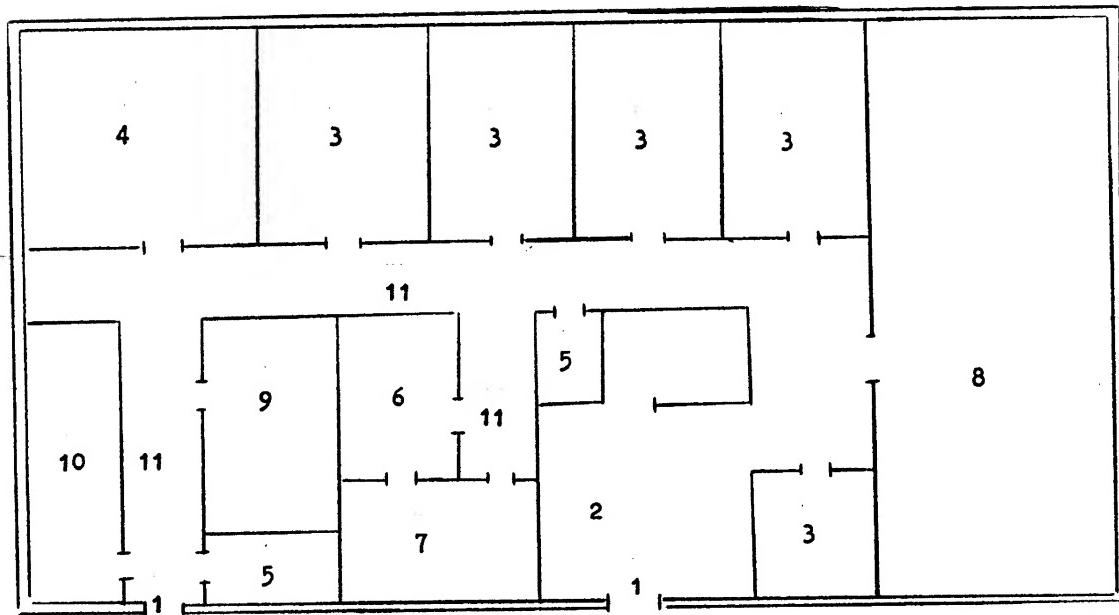
S-E-C-R-E-T

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ZVShS Internal Truing Machine Plant Administration Building -

First Floor

Sketch No. 4



S-E-C-R-E-T

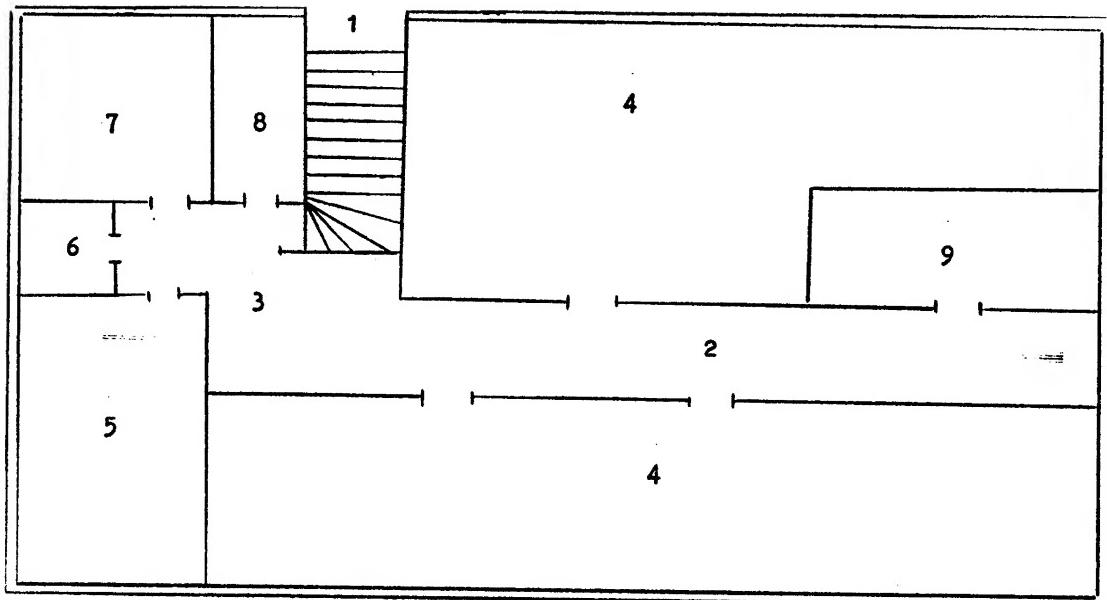
25X1

S-E-C-R-E-T

25X1

ZVShS Internal Truing Machine Plant Administration Building -
Second Floor

Sketch No. 5



S-E-C-R-E-T

25X1